

## **PPS Introduction**

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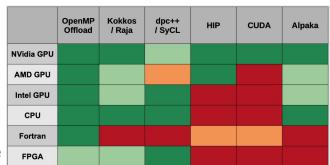




## Portable Parallelization Strategies

## (PPS)

- Investigate a range of portability solutions such as
  - o Kokkos / Raja
  - SyCL
  - Alpaka
  - OpenMP / OpenACC
- Port a small number of HEP testbeds to each language
  - Patatrack (CMS)
  - WireCell Toolkit (DUNE)
  - FastCaloSim (ATLAS)
- Define a set of metrics to evaluate the ports, and apply them
  - o ease of porting, performance, code impact, relevance, etc
- Make recommendations to the experiments
  - must address needs of both LHC style workflows with many modules and
- many developers, and smaller/simpler workflows





















- Phase 1: Preparation
  - Q1: Deliverable: matrix of benchmarks of the unaltered use cases
- Phase 2: First Implementation
  - Q4: Deliverable: choose one use case, implement in all selected parallelization technologies and benchmark them.
    - Determine the best 3 technologies according to the metrics.
  - Q5-7: Deliverable: implement all use cases in one of the three chosen technologies.
- Phase 3: Consolidate benchmarking results
  - Q8: Deliverable: write-up summarizing the benchmarking results of the use cases and recommending parallelization strategies for the HEP community.
- Phase 4: Fully-functional prototypes
  - o provide recommendations on portability strategies to experiments
  - Q12: Deliverable: fully-functional prototypes made available to the experiments.

















(sorry if we missed you!)

- Important people (contributing code, etc.)
  - Alexei Strelchenko
  - Charles Leggett
  - Haiwang Yu
  - Kwang Min Yu 0
  - Kyle Knoepfel
  - Mark Dewing
  - Matti Kortelainen
  - Meifeng Lin
  - **Taylor Childers**
  - Vince Pascuzzi
  - Yunsong Wang
  - Zhihua Dong













## Plan for today

- Reports from all 3 use cases
- Talk about: RNGs for SYCL's CUDA backend
- Year 2 Plans









